UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:	)	**Docket No.**
	)	
Master Metals, Inc.,	)	**ADMINISTRATIVE ORDER BY**
Superfund Site,	)	**CONSENT PURSUANT TO**
Cleveland, Ohio	)	**SECTIONS 106(a), 107,**
	)	**AND 122 OF THE**
	)	**COMPREHENSIVE**
	)	**ENVIRONMENTAL RESPONSE,**
Respondents:	)	**COMPENSATION, AND**
	)	**LIABILITY ACT OF 1980,**
Listed in Attachment A	)	**as amended, 42 U.S.C.**
	)	**§9606(a), 9607, AND 9622**
Limited Respondents for	)	
Operation and Maintenance Only	)	
Listed in Attachment B	)	

I. JURISDICTION AND GENERAL PROVISIONS

This Order is entered voluntarily by the United States Environmental Protection Agency ("U.S. EPA") and the Respondents. The Order is issued pursuant to the authority vested in the President of the United States by Sections 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §§9606(a), 9607 and 9622. This authority has been delegated to the Administrator of the U.S. EPA by Executive Order No. 12580, January 23, 1987, 52 Fed. Reg. 2923, and further delegated to the Regional Administrators by U.S. EPA Delegation Nos. 14-14-A, 14-14-C and 14-14-D, and to the Director, Superfund Division, Region V, by Regional Delegation Nos. 14-14-A, 14-14-C and 14-14-D.

This Order provides for performance of removal actions and reimbursement of response costs incurred by the United States in connection with property located at the former Master Metals, Inc., facility, 2850 W. Third St., Cleveland, Ohio, (the "MMI Facility")and contamination at and around residential property at 1157, 1159 and 1167 Holmden Avenue, Cleveland, Ohio (the "Holmden Properties"). These areas collectively constitute the "Master Metals Site" or the "Site". This Order requires the Respondents to conduct removal actions described herein to abate an imminent and substantial endangerment to the public health, welfare or the environment that may be presented by the actual or threatened release of hazardous substances at or from the MMI Facility.

A copy of this Order will also be provided to the State of Ohio, which has been notified of the issuance of this Order pursuant to Section 106(a) of CERCLA, 42 U.S.C. §9606(a).

Respondents' participation in this Order will not constitute an admission of liability nor admission of U.S. EPA's findings or determinations contained in this Order except in a proceeding to enforce the terms of this Order. Respondents agree to comply with and be bound by the terms of this Order. Respondents further agree that they will not contest the basis or validity of this Order or its terms.

II. PARTIES BOUND

This Order applies to and is binding upon U.S. EPA, and upon Respondents and Respondents' heirs, receivers, trustees, successors and assigns. Any change in ownership or corporate status of Respondents including, but not limited to, any transfer of assets or real or personal property will not alter such Respondents' responsibilities under this Order. Respondents are jointly and severally liable for carrying out all activities required by this Order except for those activities outlined in this Order that are to be undertaken solely by the Limited Respondents for Operation and Maintenance Only. Compliance or noncompliance by one or more Respondents with any provision of this Order will not excuse or justify noncompliance by any other Respondent.

Respondents will ensure that their contractors, subcontractors, and representatives comply with this Order. Respondents will be responsible for any noncompliance with this Order.

III. FINDINGS OF FACT

Based on available information, including the Administrative Record in this matter, U.S. EPA hereby finds that:

1. The Master Metals Site is comprised of both the MMI Facility and a nearby residential property area, the Holmden Properties, where Master Metals lead-bearing materials were deposited as fill.

2. The MMI Facility is located in the "flats" area of downtown Cleveland, in an industrialized sector of the City. This property encompasses 4.3 acres. It is bordered on two sides by railroad tracks, with an LTV Steel facility located

immediately to the east and south. The Cuyahoga River is located approximately 1,500 feet to the east. A playground and athletic field are located approximately 1,500 feet to the west and the nearest residential area begins approximately 2,000 feet to the northwest.

3. The Holmden Properties are located in a residential neighborhood, atop a hillside overlooking the flats. These properties encompass one-half acre. They are surrounded on the north, east and west by continuing residential areas and on the south and southeast by industrial areas located at the bottom of the hillside.

4. Persons, including but not limited to the Respondents listed in Attachment A, arranged for disposal or treatment or arranged with a transporter for transport for disposal or treatment of hazardous substances at the Master Metals Site or accepted hazardous substances for transport to disposal at the Master Metals Site.

5. Persons, including but not limited to the Respondents listed in Attachment A, are current or past owners of the Site, or prior to July 1987 arranged for disposal or treatment, or prior to July 1987 arranged with a transporter for transport for disposal or treatment of hazardous substances at the Site, or accepted hazardous substances for transport to disposal or treatment at the Site or at the Holmden Properties.

6. Respondent NL Industries, Inc. ("NL") initially constructed the MMI Facility in 1932, building it on slag fill. NL owned and operated the MMI Facility as a secondary lead smelter, producing lead alloys from lead-bearing dross and lead scrap materials. NL also engaged in battery cracking as part of its operations.

7. Master Metals purchased the MMI Facility in 1979. Master Metals thereafter continued to run the MMI Facility as a secondary lead smelter, receiving lead-bearing materials from off-Site sources. The lead-bearing feed material received by Master Metals was classified and regulated under the Resource Conservation and Recovery Act ("RCRA"),42 U.S.C. §§ 6901 et seq., as "D008" hazardous waste. In its operations, Master Metals used rotary and pot furnaces to convert these lead-bearing materials into lead ingots. Each furnace used by Master Metals contained a baghouse, a pollution screening structure that collected particulate matter from the furnace. The collected dust

comprised approximately 60 percent lead. The sludge remaining in the furnaces after smelting was classified and regulated under RCRA as "K069" hazardous waste.

8. By-products from the smelting operation included furnace flux, slag, dross, baghouse fines and furnace sludge. Excluding slag, most of the material was recycled back into the furnaces. Slag was tested and disposed of off-site. Cooling water was diverted to the City of Cleveland sewer system. Finished lead ingots were stored in the roundhouse at the north end of the property prior to shipment off-site.

9. Master Metals had a long history of non-compliance with various state and federal environmental, health and safety laws, as well as a history of poor operating practices; releases of hazardous materials to the environment, including the MMI Facility property, have been documented.

10. On November 19, 1980, Master Metals filed a "Part A permit" pursuant to RCRA, thereby obtaining "interim status" under RCRA to operate certain of the MMI Facility's waste piles and treatment units, as well as a container-based storage area.

11. Master Metals filed for Chapter 11 bankruptcy on January 11, 1982, in the United States Bankruptcy Court for the Northern District of Ohio. It subsequently went into reorganization. Prior to November 8, 1985, Master Metals submitted a Part B RCRA application. However, on November 8, 1985, the hazardous waste piles at the MMI Facility that contained lead-bearing dusts lost interim status for failure to comply with financial assurance requirements of 40 C.F.R. Part 265, Subpart H.

12. The United States filed a complaint for violations of RCRA on June 15, 1987, in the United States Bankruptcy Court for the Northern District of Ohio, seeking closure of the D008/K069 waste piles and compliance with RCRA financial responsibility requirements. On September 4, 1987, Master Metals and the United States entered a Stipulation to resolve these RCRA violations.

13. In the late summer of 1987, agents or employees of Master Metals deposited lead-bearing materials from the MMI Facility at the Holmden Properties as fill. These same agents or employees of Master Metals dumped some lead-

bearing materials from the MMI Facility over the edge of the Holmden Properties hillside.

14. In August 1987, Master Metals submitted a partial closure plan to the United States that included procedures to close the D008 and K069 waste piles. Master Metals was to submit an additional closure plan to address all other regulated solid waste management units at a later date. As part of the partial closure plan, Master Metals sampled subsurface soil from the battery storage area waste pile. The soil in this area contained cadmium and lead, but was not considered hazardous according to the U.S. EPA's Environmental Profile ("EP") toxicity criteria. Groundwater between three and ten feet below ground surface contained concentrations of lead.

15. On January 15, 1990, Master Metals entered into a Consent Decree with the United States to resolve continuing RCRA violations. This Consent Decree required, among other things, that Master Metals properly track all hazardous waste at the MMI Facility; submit annual reports to State of Ohio's Environmental Protection Agency("Ohio EPA"); cease battery cracking at the MMI Facility; conduct an investigation to determine subsurface and groundwater conditions at the MMI Facility; characterize waste at the MMI Facility; store the waste properly; close the waste piles containing hazardous waste in accordance with an approved RCRA closure plan; establish closure trust funds or other authorized mechanisms; fund those mechanisms in compliance with RCRA requirements; and establish RCRA required financial liability coverage.

16. Between January 15, 1990, and August 17, 1990, Master Metals accumulated over 1,500 alleged violations of the Consent Decree, spanning 19 decree provisions. Master Metals also committed additional RCRA permit violations during this period, and continued to demonstrate noncompliance with other health and safety standards. These violations included poor handling and control of toxic waste by Master Metals, such that toxic waste remained exposed to the environment at the MMI Facility.

17. In April 1990, Master Metals submitted to the U.S. EPA a revised RCRA "Part B permit" application for closure of various solid waste management units.

18. In August 1990, the United States filed a motion for civil contempt in the District Court for the Northern

District of Ohio regarding Master Metals's Consent Decree violations. The Court denied that motion, granting Master Metals six months to achieve compliance. The United States filed the motion for contempt again in January 1991 with the same result. In May 1991, the Court granted the motion, requiring Master Metals to cease operations in July 1991. However, the Court reconsidered this motion in June and denied the plaintiff government's relief.

19. In addition, on November 9, 1990, the United States demanded by letter $2,286,500 from Master Metals in stipulated penalties for Master Metals Consent Decree violations from January 15, 1990, to August 17, 1990. On June 26, 1992, the United States reached its final determination on these stipulated penalties for Master Metals, reducing Master Metals's stipulated penalty to $1,593,000. Master Metals appealed this determination to the District Court for the Northern District of Ohio pursuant to the Decree's provision on dispute resolution. The District Court, however, never ruled on the penalties. The United States filed a motion to dismiss in October 1996 on the grounds of mootness, which the Court granted in an October 29, 1996 Order.

20. In December 1990, Master Metals contracted with Compliance Technologies, a consulting firm, to install and sample groundwater monitoring wells on the Master Metals Site. Analytical results from the four monitoring wells indicated that the surrounding groundwater was contaminated at levels greater than the maximum contaminant levels (MCLs) for lead and cadmium established under the Safe Drinking Water Act, 42 U.S.C. § 300f et seq.

21. Analysis of MMI Facility soil samples for pH levels and total metals by a U.S. EPA-approved laboratory revealed that the MMI Facility's soil contained elevated levels of barium, cadmium, chromium, lead and nickel. The southern portion of the MMI Facility near the drum storage area contained concentrations of lead exceeding 10,000 parts per million. Elevated lead levels were also discovered near the battery cracking area.

22. In August 1991, Ohio EPA collected samples of raw materials from the Master Metals rotary furnace and two waste bins as part of the Consent Decree requirements. These samples contained lead concentrations as high as 5,349 mg/l.

23. Prior to September 1991, the occupants of 1157 Holmden Avenue at the Holmden Properties contacted Ohio EPA, stating that they believed that Master Metals fill material deposited on their property constituted hazardous waste. The occupants believed that the fill material was hazardous waste because of its distinctive odor and color, because vegetation died and would not grow in the filled area, and because their daughter's feet burned when she walked over the filled area in her bare feet.

24. On September 17, 1991, Ohio EPA began soil sampling at the Holmden Properties. Analysis of these samples by a U.S. EPA approved laboratory showed significant levels of lead and cadmium. Ohio EPA required Master Metals to remove contaminated soils from the Holmden Properties. In March 1992, after the clean-up, Ohio EPA sampled again the soil at the Holmden Properties and discovered additional contamination. Lead was detected in concentrations as high as 7,210 ppm in Holmden Properties soils.

25. In July 1992, U.S. EPA contracted with an outside technical assistance team (TAT) to collect soil samples on and around the MMI Facility property to determine if the MMI Facility contaminants were subject to airborne transport. Analysis of these samples for RCRA metals and Toxicity Characteristic Leachate Procedure (TCLP) metals by a U.S. EPA-approved laboratory revealed that TCLP lead was present in concentrations more than 200 times greater than the RCRA regulatory level of 5 mg/l, at all sample location points except for one MMI Facility location and one location off of the MMI Facility. MMI Facility soil samples indicated the presence of TCLP arsenic and cadmium, with one location testing at 115,000 ppm for lead. Surface samples collected from off of the MMI Facility near both the Valleyview Apartments complex, which is 1,500 feet northwest of the Facility, and near the Tremont Valley Park which is 2,000 feet northwest of the Facility, were found to contain lead concentrations ranging from 148 to 1,850 ppm. The source of this latter lead contamination has not been conclusively traced to the MMI Facility.

26. Three ambient air monitors were installed by the Ohio EPA near the facility property in January of 1992. During the first two quarters of 1992, air samples collected from the station immediately downwind of Master Metals revealed exceedances of the Clean Air Act's National Ambient Air Quality Standards ("NAAQS") for lead, 42 U.S.C. §§ 7401 et seq. In April and May 1992, four more NAAQS violations were

recorded. In July 1992, Master Metals installed a sprinkler system in an attempt to prevent airborne lead from migrating off the MMI Facility property.

27. On August 3, 1992, Ohio EPA ordered an immediate 30-day shut down of the MMI Facility because of Master Metals's "life-threatening" violations of the NAAQS for lead. During Master Metals's shutdown, downwind ambient air monitoring data collected by Ohio EPA registered lead levels in violation of the NAAQS for lead on every day except one. An unknown portion of these NAAQS violations were due to lead-laden MMI Facility dust migrating off of the MMI Facility via prevailing winds. To minimize the effects of wind-blown MMI Facility dust, on September 9, 1992, Master Metals directed a thorough cleaning of the MMI Facility.

28. In December 1992, Master Metals removed additional contaminated soils from the Holmden Properties as ordered by Ohio EPA. After this excavation, Master Metals collected additional soil samples at the Holmden Properties. Analysis of these samples showed elevated levels of lead as high as 57,000 ppm.

29. On August 5, 1993, the Ohio EPA director ordered Master Metals to cease operating the MMI Facility until it could demonstrate compliance. Despite the shutdown of the MMI Facility's furnaces on this date, a U.S. EPA downwind air monitoring station routinely detected elevated lead concentrations as much as 500 times greater than the upwind concentrations and 33 times the NAAQS quarterly average. An unknown portion of these NAAQS violations were due to the lead-laden MMI Facility dust migrating off of the MMI Facility property via prevailing winds.

30. Shortly after Master Metals was shut down, Bank One of Akron, Ohio, took possession of all of Master Metals's cash collateral and accounts receivable.

31. After Master Metals's shutdown, Master Metals and U.S. EPA continued negotiations to resolve Master Metals's RCRA noncompliance. As part of these negotiations, Master Metals and Mr. Mickey, the now-deceased former President of Master Metals, provided financial information to U.S. EPA.

32. On March 28, 1995, U.S. EPA's RCRA Division referred the Master Metals Site to CERCLA for cleanup. In an August 22, 1995 letter, Master Metals withdrew all permits still in effect regarding its operation, effectively terminating its

ability to legally treat, store or dispose of hazardous waste at the MMI Facility.

33. The occupants of 1157 Holmden Avenue at the Holmden Properties were unable to ever return to their home. The house on the property was vandalized during its vacancy, and later damaged by arson. The City of Cleveland condemned the house on August 18, 1995. On February 22, 1996, the City demolished it.

34. Throughout 1995 and 1996, vandals and scavengers visited the MMI Facility on an intermittent basis. Further, in 1995 or 1996, Master Metals partially demolished one of the MMI Facility structures, leaving piles of rubble, girders and sheet metal standing around the structure's remains.

35. On April 9, 1997, additional Site investigation began at the Holmden Properties. This investigation included sampling which revealed that the Holmden Properties contained approximately 2,000-3,000 cubic yards of lead-impacted materials exceeding the 400 ppm default cleanup criteria set for that investigation. Lead levels as high as 8,350 ppm were detected.

36. Fifty-three potentially responsible parties (the "Smelter Respondents") signed an Administrative Order by Consent for the Master Metals Site, which became effective April 17, 1997, ("Smelter Order"). The Smelter Order required the Smelter Respondents to conduct a time-critical removal action in Phase I. In Phase II the Smelter Order required the Smelter Respondents to complete an Engineering Evaluation and Cost Analysis ("EE/CA")for a non-time-critical removal action for the MMI Facility, pursuant to the National Contingency Plan ("NCP"), 40 C.F.R. Part 300, as amended, and the Superfund Accelerated Cleanup Model ("SACM") guidance. These removal actions were required to abate an imminent and substantial endangerment to the public health, welfare or the environment that may have been presented by the actual or threatened release of hazardous substances at or from the MMI Facility. This order also required the Smelter Respondents in Phase II to prepare an EE/CA report of alternative response actions pursuant to 40 C.F.R. §300.415(b)(4)(i), and the SACM guidance, to address the remaining environmental concerns at the MMI Facility.

37. On May 13, 1997, the Smelter Respondents submitted a Phase I time-critical removal action workplan for the MMI

Facility to the U.S. EPA for approval. In Phase I, the Smelter Respondents performed the following time-critical removal actions:

a. Analysis and mapping of waste materials and contamination at the MMI Facility for removal purposes;

b. Long-term securing of the MMI Facility against trespassers through the use of fences, signs and other devices, as necessary;

c. Excavation, demolition, consolidation, and/or removal of highly contaminated buildings, structures, soils, loose waste materials, demolition debris, machinery, garbage, dusts, post-industrial debris and office or industrial equipment where such actions reduced the spread of, or direct contact with, the contamination;

d. Removal of drums, barrels, tanks, or other bulk containers that contained or may have contained hazardous substances or pollutants or contaminants where such actions reduced the likelihood of spillage or of exposure to humans, animals or the food chain; and

e. Containment, treatment, disposal, or incineration of hazardous materials, where such action was necessary to reduce the likelihood of human, animal or food chain exposure.

38. On August 8, 1997, the Smelter Respondents submitted the Phase II EE/CA workplan for the MMI Facility to the U.S. EPA for approval. Phase II involved preparing an EE/CA Report identifying and analyzing alternative response actions necessary to complete the non-time critical removal action. The EE/CA was to be consistent with U.S. EPA's guidance entitled, "Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA", EPA/540-R-93-057, Publication 9360.32, dated August 1993.

39. On October 1, 1997, the Smelter Respondents submitted the EE/CA sampling plan for U.S. EPA's approval.

40. On October 23, 1997, six potentially responsible parties ("Holmden Respondents") signed an Administrative Order by Consent for the Holmden Properties("Holmden Order"). The Holmden Order required the Holmden Respondents

to conduct a time-critical removal action at the Holmden Properties pursuant to the NCP and SACM guidance, to abate an imminent and substantial endangerment to the public health, welfare or the environment that may have been presented by the actual or threatened release of hazardous substances at or from the Holmden Properties.

41. On October 15, 1997, the Holmden Respondents submitted a plan of remediation activities for U.S. EPA's approval.

42. On January 19, 1998, the Smelter Respondents submitted the EE/CA data report for the MMI Facility for U.S. EPA's approval.

43. On February 6, 1998, the Holmden Respondents submitted a final report for the removal activities at the Holmden Properties. The Holmden Respondents treated the excavated contaminated soils to below current regulatory levels and below the Land Disposal Restriction level of 0.75 mg/L TCLP for lead. After the removal, the Holmden Respondents restored the Holmden Properties to the properties' original condition including revegetation.

44. On April 24, 1998, the Smelter Respondents submitted the final report for the Phase I time-critical removal activities at the MMI Facility. The Smelter Respondents performed the following actions:

a. Analyzed and mapped all waste materials and contamination for removal purposes, delineating the location of all waste materials and the extent of contaminant toxicity and potential for migration;

b. Secured the MMI Facility against trespassers through the use of fences, signs and other devices, as deemed necessary;

c. Excavated, demolished, consolidated and removed highly contaminated buildings, structures, soils, loose waste materials, loose industrial by-products, construction materials, demolition debris, machinery, garbage, dusts, post-industrial debris and office or industrial equipment;

d. Removed drums, barrels, tanks, and other bulk containers that contained hazardous substances or pollutants or contaminants; and

e. Contained, treated, disposed and incinerated hazardous materials.

Removal activities involved characterizing and removing non-hazardous materials and removing or treating and disposing of hazardous materials. During the course of this project the Smelter Respondents' contractor handled 4,800 cubic yards of solid non-hazardous waste; 500 cubic yards of brick/concrete special waste; 21 tons of asbestos containing material; 1,160 cubic yards of K069, D006, D008 waste; 3,600 cubic yards of chromium trioxide; and over 200 bottles of laboratory chemicals. Over 3,000 gallons of liquid wastes were characterized through the course of this removal.

The result of this time-critical removal action was that all highly contaminated structures were demolished; hazardous materials were characterized and disposed of accordingly; and the MMI Facility was secured to prevent unauthorized entry.

45. On November 23, 1998, the Smelter Respondents submitted the final EE/CA report for the Master Metals Site for U.S. EPA's approval. The Smelter Order Phase II involved completing an EE/CA Report outlining alternative response actions in accordance with the Statement of Work (SOW) attached to the Smelter Order. This SOW required completion of the following tasks:

1. EE/CA Work Plan
2. EE/CA Support Sampling Plan
3. EE/CA Support Sampling
4. EE/CA Data Report
5. EE/CA and Report

46. On November 23, 1998, U.S. EPA reviewed and submitted comments on the revised risk assessment and derivation of the risk based remediation goal for lead documented in the November 23, 1998, Revised EE/CA for the Master Metals Site.

47. On December 10, 1998, U.S. EPA and the Ohio EPA reviewed the revised EE/CA, dated November 23, 1998, for the Master Metals Site. U.S. EPA considered the EE/CA complete and approved it.

48. On February 23, 1999, U.S. EPA submitted a notice of a public comment period on the EE/CA for the clean-up of lead contaminated soils at the MMI Facility, and notice of a March 18, 1999, public meeting on that subject, for

publication in the Cleveland Plain Dealer. U.S. EPA's recommended alternative included:

a. Excavation of off-site contaminated soils;

b. Consolidation of contaminated soils on site;

c. Cover of contaminated areas with two feet of clean fill and revegation;

d. Operation and maintenance of the cover for 30 years; and

e. Deed restrictions to minimize potential exposure to contaminated soil.

49. In March 1999, U.S. EPA released a fact sheet to the citizens of Cleveland and interested stakeholders regarding the EE/CA and U.S. EPA's proposed clean-up plan.

50. On March 18, 1999, U.S. EPA conducted a public meeting regarding the EE/CA and U.S. EPA's proposed clean-up plan. The transcript of the public meeting is in the Administrative Record.

51. On March 31, 1999, U.S. EPA extended the public comment period regarding the EE/CA and U. S. EPA's proposed clean-up plan, for an additional 30 days.

52. In April 1999, U.S. EPA approved the final community involvement plan for the MMI Facility.

53. On May 6, 1999, Ohio EPA approved the City of Cleveland's request for an Urban Setting Designation for the "Industrial Valley Area" within the City of Cleveland. This area includes the Master Metals Site, in the event it is eligible for Ohio EPA's Voluntary Action Program.

54. On August 19, 1999, U. S. EPA identified the community in the area of the MMI Facility as an environmental justice (EJ) area, with the percentage of low income or minority residents greater than or equal to two times the state average. Region 5's EJ criteria percentages for the State of Ohio are a minority population of 13% or greater and a low income population of 60% or greater. In the area near the MMI facility, 26% of the population is minority and 74.2% is low income.

55. On September 30, 1999, U.S. EPA signed an Action Memorandum for a non-time-critical removal action at the MMI Facility.

56. On April 12, 2000, NL surveyed the MMI Facility to facilitate redevelopment by prospective purchasers Bredt-Zanick, LLC and the Northern Ohio Lumber and Timber Company ("NOLTCO") (together the "Prospective Purchasers").

57. On September 22, 2000, U.S. EPA issued a contingent amended Action Memorandum, which changed the project scope from a soil cover cap to an asphalt cap. U.S. EPA did this to accommodate the Prospective Purchasers' planned redevelopment of the MMI Facility.

58. On May 8, 2001, the Prospective Purchaser Agreement ("PPA") with the Prospective Purchasers became effective. That PPA requires the prospective purchasers to undertake all operation and maintenance for the MMI Facility. Therefore, the prospective purchasers are Limited Respondents for Operation and Maintenance Only. As such, the Prospective Purchasers' only obligation of this Administrative Order is to perform operation and maintenance and to comply with the access and institutional control requirements of Section V. The Limited Respondents for Operation and Maintenance Only shall have no other obligations under this Order, including, but not limited to the obligation to pay costs under Section VII of this Administrative Order.

IV. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, and the Administrative Record supporting these removal actions, U.S. EPA has determined that:

1. The MMI Facility is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

2. Lead, cadmium, chromium, barium and nickel are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

3. Each Respondent is a "person" as defined by Section 101(21)of CERCLA, 42 U.S.C. § 9601(21).

4. All Respondents are either persons who at the time of disposal of any hazardous substances owned or operated the

MMI Facility, or who arranged for disposal or treatment or transport for disposal or treatment of hazardous substances at the MMI Facility. Each Respondent therefore is liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

5. The Prospective Purchasers are Limited Respondents for Operation and Maintenance Only, and their only obligations under this Order are to complete the operation and maintenance required by the approved Operation and Maintenance Work Plan discussed in section 2.4 below, Task 6 of the SOW, and Section V of the PPA.

6. The conditions described in the Findings of Fact above constitute an actual or threatened "release" of a hazardous substance from the facility into the "environment" as defined by Sections 101(8) and (22) of CERCLA, 42 U.S.C. §§ 9601(8) and (22).

7. The conditions present at the MMI Facility constitute a threat to public health, welfare, or the environment based upon the factors set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended ("NCP"), 40 C.F.R. § 300.415(b)(2). These factors include, but are not limited to, the following:

   a. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants; this factor is present at the MMI Facility due to the existence of lead contaminated soils.

   b. High levels of hazardous substances or pollutants or contaminants in soils are largely at or near the surface, that may migrate; this factor is present at the MMI Facility due to the existence of lead contaminated soils.

8. The actual or threatened release of hazardous substances from the MMI Facility may present an imminent and substantial endangerment to the public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

9. The removal actions required by this Order, if properly performed under the terms of this Order, are consistent with the NCP. The removal actions required by this Order are necessary to protect the public health, welfare, or the environment.

V. ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law and Determinations, it is hereby ordered and agreed that Respondents will comply with the following provisions, including but not limited to all documents attached to or incorporated into this Order, and perform the following actions:

1. Designation of Contractor, Project Coordinator, and Remedial Project Manager

Respondents will perform the removal actions required by this Order themselves, or retain one or more contractors to implement the removal actions. Respondents will notify U.S. EPA of Respondents' qualifications or the name and qualifications of such contractor(s), whichever is applicable, within five business days of the effective date of this Order. Respondents will also notify U.S. EPA of the name and qualifications of any other contractors or subcontractors retained to perform work under this Order at least five business days prior to commencement of such work. U.S. EPA retains the right to disapprove of the Respondents or any of the contractors and/or subcontractors retained by the Respondents. If U.S. EPA disapproves a selected contractor, Respondents will retain a different contractor within two business days following U.S. EPA's disapproval and will notify U.S. EPA of that contractor's name and qualifications within three business days of U.S. EPA's disapproval.

Within five business days after the effective date of this Order, the Respondents will designate a Project Coordinator who will be responsible for administration of all the Respondents' actions required by the Order. Respondents will submit the designated coordinator's name, address, telephone number, and qualifications to U.S. EPA. To the greatest extent possible, the Project Coordinator will be present on-site or readily available during site work. U.S. EPA retains the right to disapprove of any Project Coordinator named by the Respondents. If U.S. EPA disapproves a selected Project Coordinator, Respondents will retain a different Project Coordinator within three business days following U.S. EPA's disapproval and will notify U.S. EPA of that person's name and qualifications within four business days of U.S. EPA's disapproval. Receipt by Respondents' Project Coordinator of any notice or communication from U.S. EPA relating to this Order will constitute receipt by all Respondents.

The U.S. EPA has designated Gwendolyn Massenburg of the Remedial Response Branch, Region V, as its Remedial Project Manager ("RPM"). Respondents will direct all submissions

required by this Order to the RPM at 77 West Jackson Boulevard, SR-6J, Chicago, Illinois, 60604-3590, by certified or express mail. Respondents will also send a copy of all submissions to Susan Prout, Associate Regional Counsel, 77 West Jackson Boulevard, C-14J, Chicago, Illinois, 60604-3590,and to the Ohio EPA, attention: Sheila Abraham, Division of Emergency and Remedial Response, 2110 East Aurora Road, Twinsburg, OH 44087. All Respondents are encouraged to make their submissions to U.S. EPA on recycled paper (which includes significant post consumer waste paper content where possible) and using two-sided copies.

U.S. EPA and Respondents will have the right, subject to the immediately preceding paragraph, to change their designated Project Coordinator, RPM or Project Counsel. U.S. EPA will notify the Respondents, and Respondents will notify U.S. EPA, as early as possible before such a change is made, but in no case less than twenty four hours before such a change. The initial notification may be made orally but it will be promptly followed by a written notice.

2. Work to Be Performed

Respondents will perform the actions set forth below.

Respondents will perform, at a minimum, the following removal actions:

1. Remove site fencing.

2. Excavate perimeter soil (eastern, western, and southern boundary) that contains lead that exceeds a concentration of 1000mg/kg (ppm) or until the historic slag is reached to reduce the likelihood of human, animal or food chain exposure.

3. Conduct a treatability study of all material excavated to determine if treatment of this material is a viable option. Treatment of this material is required when the excavated soil does not pass TCLP. Respondents will provide a copy of the treatability study to U. S. EPA prior to consolidation of the soils. See Section 1.1 of the Statement of Work for treatment of the excavated soils.

4. Perform treatment (if necessary) in secondary containers or cans using the lead stabilization process. Treatment will satisfy the Land Disposal Restriction prior to

consolidation. See section 1.1 of the Statement of Work for treatment requirements. Respondents will submit a post-treatment report to U.S. EPA prior to consolidating the material on site.

5. Backfill all areas excavated or sub-graded areas to grade with clean soil. The existing property lines will serve as center and highest elevation point of the graded slope.

6. Consolidate excavated treated soils and Holmden Properties treated soils on-site, underneath an impermeable geomembrane, or appropriately dispose of the material in a hazardous waste landfill or in a solid waste landfill.

7. The site must be capped with the asphalt cover system, engineered (with the necessary thickness and load-bearing capacity) to permit appropriate reuse, as specified in the SOW.

8. Provide specifics on the cover system and on the areas under the cover system (including a cross section and designation of the areas where the treated soils will be placed) in the remedial design plan for U.S. EPA and Ohio EPA approval.

9. Repair or recondition the cracked concrete (defined as fully penetrating the existing concrete surfaces with a width greater than ½ inch) portions of the MMI Facility by sealing the cracks followed by scarification or encapsulation of the concrete surface.

10. Eliminate dangers associated with open pits and sumps on the MMI Facility.

11. Replace the fence on the MMI Facility as specified in the SOW.

12. Perform required operation and maintenance as required for the next thirty years. The particular obligations of the Respondents and the Limited Respondent for Operation and Maintenance Only are set forth in Section V.2.4 below.

2.1 Work Plan and Implementation

Attached to this Order for the Respondents to follow is a Statement of Work.

Within sixty business days after the effective date of this Order, the Respondents will submit to U.S. EPA for approval, a draft Work Plan for performing the removal activities set forth above. The draft Work Plan will provide a description of, and an expeditious schedule for, the actions required by this Order.

U.S. EPA may approve, disapprove, require revisions to, or modify the draft Work Plan. If U.S. EPA requires revisions, Respondents will submit a revised draft Work Plan within seven business days of receipt of U.S. EPA's notification of required revisions. Respondents will implement the Work Plan as finally approved in writing by U.S. EPA in accordance with the schedule approved by U.S. EPA. Once approved, or approved with modifications, the Work Plan, the schedule, and any subsequent modifications will be fully enforceable under this Order. Respondents will notify U.S. EPA at least forty eight hours prior to performing any on-site work pursuant to the U.S. EPA approved Work Plan. Respondents will not commence or undertake any removal actions at the Site without prior U.S. EPA approval.

2.2 Health and Safety Plan

Within thirty business days after the effective date of this Order, the Respondents will submit for U.S. EPA review and comment a plan that ensures the protection of the public health and safety during the performance of on-site work under this Order. This plan will comply with applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 C.F.R. Part 1910. If U.S. EPA determines it is appropriate, the plan will also include contingency planning. Respondents will incorporate all changes to the plan recommended by U.S. EPA, and implement the plan during the pendency of the removal action.

2.3 Quality Assurance and Sampling

All sampling and analysis performed pursuant to this Order will conform to U.S. EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures. Respondents will ensure that the laboratory used to perform the analysis participates in a QA/QC program that complies with U.S. EPA guidance.

Upon request by U.S. EPA, Respondents will have such a laboratory analyze samples submitted by U.S. EPA for quality assurance monitoring. Respondents will provide to U.S. EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or analysis. Respondents will also ensure provision of analytical tracking information consistent with OSWER Directive No. 9240.0-2B, "Extending the Tracking of Analytical Services to PRP-Lead Superfund Sites."

Upon request by U.S. EPA, Respondents will allow U.S. EPA or its authorized representatives to take split and/or duplicate samples of any samples collected by Respondents or their contractors or agents while performing work under this Order. Respondents will notify U.S. EPA not less than three business days in advance of any sample collection activity. U.S. EPA will have the right to take any additional samples that it deems necessary.

2.4 Post-Removal Site Control/Operation and Maintenance

1. In accordance with the Work Plan schedule, or as otherwise directed by the RPM, Respondents will submit a proposal for post-removal site control, consistent with Section 300.415(l) of the NCP, 40 C.F.R. §300.415(l), and OSWER Directive 9360.2-02. The Limited Respondents for Operation and Maintenance Only, are primarily responsible for completing the post-removal site control and Operation and Maintenance of the MMI Facility. The Respondents are secondarily responsible for operation and maintenance, except that they are not responsible for maintaining the cover system under any circumstances.

b. By no later than 30 days after the effective date of this Order, Respondents will also make a payment to U.S. EPA of $9600 to satisfy their obligation to perform Operation and Maintenance of the cover system. Respondents will comply with the requirements of Section VII.c in making this payment, except that payment will be due on the date specified herein.

c. Respondents and Limited Respondents for Operation and Maintenance Only will provide U.S. EPA with documentation of all post-removal site control arrangements.

2.5 Reporting

Respondents will submit a monthly written progress report to U.S. EPA concerning actions undertaken pursuant to this Order, beginning the 10th day of each month following the date of U.S. EPA's approval of the Work Plan, until termination of this Order, unless otherwise directed in writing by the RPM. These reports will describe all significant developments during the preceding period, including the work performed and any problems encountered, analytical data received during the reporting period, and developments anticipated during the next reporting period, including a schedule of work to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

Any Respondent that owns any portion of the Site will, at least thirty days prior to the conveyance of any interest in real property at the Site, give written notice of this Order to the transferee and written notice of the proposed conveyance to U.S. EPA and the State. The notice to U.S. EPA and the State will include the name and address of the transferee. The party conveying such an interest will require that the transferee will provide access as described in Section V.3 (Access to Property and Information).

2.6 Final Report

Within sixty calendar days after completion of all removal actions required under this Order, the Respondents will submit for U.S. EPA review a final report summarizing the actions taken to comply with this Order. The final report will conform to the requirements set forth in Section 300.165 of the NCP, 40 C.F.R. §300.165. The final report will also include a good faith estimate of total costs incurred in complying with the Order, a listing of quantities and types of materials removed off-site or handled on-site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destinations of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits).

The final report will also include the following certification signed by a person who supervised or directed the preparation of that report:

> Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all

relevant persons involved in the preparation of this report, the information submitted is true and complete.

3. Access to Property and Information

Limited Respondents for Operation and Maintenance Only will provide access to the MMI Facility and will use best efforts to provide and obtain access to off-site areas to which access is necessary to implement this Order, and Respondents and Limited Respondents will provide access to all records and documentation related to the conditions at the MMI Facility and the actions conducted pursuant to this Order. Such access will be provided to U.S. EPA employees, contractors, agents, consultants, designees, representatives, and State of Ohio representatives. These individuals will be permitted to move freely at the MMI Facility and appropriate off-site areas in order to conduct actions which U.S. EPA determines to be necessary. Respondents will submit to U.S. EPA, upon request, the results of all sampling or tests and all other validated data generated by Respondents or their contractors, or on the Respondents' behalf during implementation of this Order.

Where work under this Order is to be performed in areas owned by or in possession of someone other than Respondents or Limited Respondents for Operation and Maintenance Only, Respondents will use their best efforts to obtain all necessary access agreements within thirty calendar days after the effective date of this Order, or as otherwise specified in writing by the RPM. Respondents will immediately notify U.S. EPA if, after using their best efforts, they are unable to obtain such agreements. Respondents will describe in writing their efforts to obtain access. Upon Respondents' written request, U.S. EPA may then assist Respondents in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as U.S. EPA deems appropriate. Respondents will reimburse the United States for all costs and attorneys' fees incurred by the United States in obtaining such access.

4. Record Retention, Documentation, Availability of Information

Respondents will preserve all documents and information, in their possession or the possession of their contractors, subcontractors or representatives, relating to work performed under this Order, or relating to the hazardous substances found on or released from the MMI Facility, for six years following completion of the removal actions required by this Order. At the end of this six year period and at least sixty days before any document or information is destroyed, Respondents will notify

U.S. EPA that such documents and information are available to U.S. EPA for inspection, and upon request, will provide the originals or copies of such documents and information to U.S. EPA. In addition, Respondents will provide documents and information retained under this Section at any time before expiration of the six year period at the written request of U.S. EPA. Any information that Respondents are required to provide or maintain pursuant to this Order is not subject to the Paperwork Reduction Act of 1995, 44 U.S.C. §3501 et seq.

5. Off-Site Shipments

All hazardous substances, pollutants or contaminants removed off-site pursuant to this Order for treatment, storage or disposal will be treated, stored, or disposed of at a facility in compliance, as determined by U.S. EPA, with the U.S. EPA Off-Site Rule, 40 C.F.R. §300.440, 58 Fed. Reg. 49215 (Sept. 22, 1993).

6. Compliance With Other Laws

Respondents will perform all actions required pursuant to this Order in accordance with all applicable local, state, and federal laws and regulations except as provided in Section 121(e) of CERCLA, 42 U.S.C. §9621(e), and 40 C.F.R. §300.415(j). In accordance with 40 C.F.R. §300.415(j), all on-site actions required pursuant to this Order will, to the extent practicable, as determined by U.S. EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements under federal environmental or state environmental or facility siting laws.

7. Emergency Response and Notification of Releases

If any incident, or change in Site conditions, during the activities conducted pursuant to this Order causes or threatens to cause an additional release of hazardous substances from the MMI Facility or an endangerment to the public health, welfare, or the environment, the Respondents will immediately take all appropriate action to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondents will also immediately notify the RPM or, in the event of his/her unavailability, will notify the Regional Duty Officer, Emergency Response Branch, Region V at (312) 353-2318, of the incident or Site conditions. If Respondents fail to respond, U.S. EPA may respond to the release or endangerment and reserve the right to recover costs associated with that response.

Respondents will submit a written report to U.S. EPA within seven business days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. Respondents will also comply with any other notification requirements, including those in Section 103 of CERCLA, 42 U.S.C. §9603, and Section 304 of the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. §11004.

8. Institutional Controls

a. If any property where land/water use restrictions are needed to implement this Order is owned or controlled by persons other than any of the Respondents or Limited Respondents for Operation and Maintenance Only, Respondents shall use best efforts to secure from such persons an agreement, enforceable by Respondents, Limited Respondents for Operation and Maintenance Only, and U.S. EPA to refrain from using such property in any manner that would interfere with or adversely affect the integrity or protectiveness of the actions to be implemented pursuant to this Order. Similarly, commencing on the effective date of this Order, Respondents and Limited Respondents for Operation and Maintenance Only also agree to refrain from using the MMI Facility in any manner that would interfere with or adversely affect the integrity or protectiveness of the actions to be implemented pursuant to this Order. Such restrictions include, but are not limited to,

1. Well construction: no person may construct or reconstruct a well on the property without:

   (a) notifying U.S. EPA and Ohio EPA;

   (b) determining what specific prohibitions or requirements are applicable to the well;

   (c) obtaining approval from all relevant authorities and U.S. EPA prior to the construction or reconstruction; and

   (d) complying with all requirements applicable to the well.

2. Drilling into the cover system: no person may drill or puncture the cover system on the property without:

(a) notifying U.S. EPA and Ohio EPA;

(b) determining what specific prohibitions or requirements are applicable to the asphalt cover;

(c) obtaining approval from all relevant authorities and U.S. EPA prior to the drilling; and

(d) maintaining the protectiveness of the asphalt cover.

3. Restricted activities: no person may undertake the following activities without written permission from U.S. EPA:

(a) excavating or grading of any portion of the land surface within the current fence line;

(b) filling in the capped area;

(c) constructing or installing a building or other structures with a foundation that would sit on or be placed within the cap or cover; or

(d) using of groundwater for drinking purposes.

b. With respect to the MMI Facility, Limited Respondents for Operation and Maintenance Only will execute and record in the Recorder's Office of Cuyahoga County, State of Ohio, an easement, running with the land, that (i) grants a right of access as set forth at Section V.3 of this Order, above; and (ii) grants the right to enforce the land/water use restrictions listed in Section V.8 of this Order, or other restrictions, that U.S. EPA determines are necessary to implement, ensure non-interference with, or ensure the protectiveness of the actions to be performed pursuant to this Order. The rights to enforce land/water use restrictions shall be granted to one or more of the following persons, as determined by U.S. EPA: (i) the United States, on behalf of EPA, and its representatives, (ii) the State and its representatives, (iii) the Respondents and their representatives, and/or (iv) other appropriate grantees. Within forty-five days of entry of this Order, the Limited Respondents for Operation and Maintenance Only shall submit to U.S. EPA for review and approval with respect to the MMI Facility:

1. A draft easement enforceable under the laws of the State of Ohio, free and clear of all prior liens and encumbrances (except as approved by U.S. EPA), and acceptable under the

Attorney General's Title Regulations promulgated pursuant to 40 U.S.C. § 255; and

2. A current title commitment or report prepared in accordance with the U.S. Department of Justice Standards for the Preparation of Title Evidence in Land Acquisitions by the United States (1970) (the "Standards").

Within fifteen days of EPA's approval and acceptance of the easement, Limited Respondents for Operation and Maintenance Only shall update the title search and, if it is determined that nothing has occurred since the effective date of the commitment or report to affect the title adversely, the easement shall be recorded with the Recorder's Office of Cuyahoga County. Within thirty days of the recording of the easement, the Limited Respondents for Operation and Maintenance Only shall provide EPA with final title evidence acceptable under the Standards, and a certified copy of the original recorded easement showing the clerk's recording stamps.

c. With respect to property that is owned or controlled by persons other than Limited Respondents for Operation and Maintenance Only but for which land/water use restrictions are needed, Respondents shall be responsible for implementing the requirements of Section V.8.b. Respondents will immediately notify U.S. EPA if, after using best efforts, they are unable to obtain an agreement regarding land/water use restrictions. Respondents will describe in writing their efforts to obtain such agreement. Upon written request, U.S. EPA may then assist Respondents in obtaining such restrictions or easements. Respondents will reimburse U.S. EPA for all costs and attorneys' fees incurred by the United States in obtaining such restrictions or easements.

d. If U.S. EPA determines that land/water use restrictions in the form of state or local laws, regulations, ordinances or other governmental controls are needed to implement this Order's actions, ensure the integrity and protectiveness thereof, or ensure non-interference therewith, Limited Respondents for Operation and Maintenance Only shall cooperate with U.S. EPA's efforts to secure such governmental controls.

VI. AUTHORITY OF THE U.S. EPA REMEDIAL PROJECT MANAGER

The Remedial Project Manager (RPM) will be responsible for overseeing the implementation of this Order. The RPM will have the authority vested in an RPM by the NCP, including the authority to halt, conduct, or direct any work required by this Order, or to

direct any other response action undertaken by U.S. EPA or Respondents at the Site. Absence of the RPM from the MMI Facility will not be cause for stoppage of work unless specifically directed by the RPM.

VII. REIMBURSEMENT OF COSTS

a. By no later than thirty days after the Effective Date of this Order, Respondents will pay to U.S. EPA $62,760 in settlement of all costs that have accrued through January 31, 2001. Respondents will comply with the requirements of Section VII.c below in making this payment, except that payment will be due on the date specified in this Section VII.a.

b. U.S. EPA will send Respondents a bill for "oversight costs" on an annual basis, such bill to include an Itemized Cost Summary. "Oversight costs" are all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing plans, reports and other items pursuant to this AOC. "Oversight costs" will also include all costs, including direct and indirect costs, incurred by the United States in connection with the Site starting from February 1, 2001.

c. Respondents will, within thirty calendar days of receipt of a bill, remit a cashier's or certified check for the amount of the bill made payable to the "Hazardous Substance Superfund," to the following address:

U.S. Environmental Protection Agency
Program Accounting & Analysis Section
P.O. Box 70753
Chicago, Illinois 60673

Respondents will simultaneously transmit a copy of the check to the Director, Superfund Division, U.S. EPA Region 5, 77 West Jackson Blvd., Chicago, Illinois, 60604-3590. Payments will be designated as "Response Costs - Master Metals Cleveland Site" and will reference:

the payer’s name and address;

the U.S. EPA site identification number 05WB; and

the docket number of this Order.

d. In the event that any payment is not made within the deadlines described above, Respondents will pay interest on the

unpaid balance. Interest is established at the rate specified in Section 107(a) of CERCLA, 42 U.S.C. §9607(a). The interest will begin to accrue on the date of the Respondents' receipt of the bill (or for the $62,760 due under this Order, thirty days after the effective date of this Order). Interest will accrue at the rate specified through the date of the payment. Payments of interest made under this paragraph will be in addition to such other remedies or sanctions available to the United States by virtue of Respondents' failure to make timely payments under this Section.

Respondents may dispute all or part of a bill for Oversight costs submitted under this Order, if Respondents allege that U.S. EPA has made an accounting error, or if Respondents allege that a cost item is inconsistent with the NCP.

If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If the dispute is not resolved before payment is due, Respondents will pay the full amount of the uncontested costs into the Hazardous Substance Fund as specified above on or before the due date. Within the same time period, Respondents will pay the full amount of the contested costs into an interest-bearing escrow account. Respondents will simultaneously transmit a copy of both checks to the RPM. Respondents will ensure that the prevailing party or parties in the dispute will receive the amount upon which they prevailed from the escrow funds plus interest within twenty calendar days after the dispute is resolved.

VIII. DISPUTE RESOLUTION

The parties to this Order will attempt to resolve, expeditiously and informally, any disagreements concerning this Order.

If the Respondents object to any U.S. EPA action taken pursuant to this Order, including billings for oversight costs, the Respondents will notify U.S. EPA in writing of their objections within ten calendar days of such action, unless the objections have been informally resolved. This written notice will include a statement of the issues in dispute, the relevant facts upon which the dispute is based, all factual data, analysis or opinion supporting Respondents' position, and all supporting documentation on which such party relies. U.S. EPA will submit its Statement of Position, including supporting documentation, no later than ten calendar days after receipt of the written notice of dispute. In the event that these ten-day time periods for exchange of written documents may cause a delay in the work, they will be shortened upon, and in accordance with, notice by

U.S. EPA. The time periods for exchange of written documents relating to disputes over billings for oversight costs may be extended at the sole discretion of U.S. EPA.

An administrative record of any dispute under this Section will be maintained by U.S. EPA. The record will include the written notification of such dispute, and the Statement of Position served pursuant to the preceding paragraph. Upon review of the administrative record, the Director of the Superfund Division, U.S. EPA Region V, will resolve the dispute consistent with the NCP and the terms of this Order.

Respondents' obligations under this Order will not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondents will fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with U.S. EPA's decision, whichever occurs.

IX. FORCE MAJEURE

Respondents agree to perform all requirements under this Order within the time limits established under this Order, unless the performance is delayed by a force majeure. For purposes of this Order, a force majeure is defined as any event arising from causes beyond the control of Respondents or of any entity controlled by Respondents, including but not limited to their contractors and subcontractors, that delays or prevents performance of any obligation under this Order despite Respondents' best efforts to fulfill the obligation. Force majeure does not include financial inability to complete the work or increased cost of performance.

Respondents will notify U.S. EPA orally within twenty-four hours after Respondents become aware of any event that Respondents contend constitutes a force majeure, and in writing within seven calendar days after the event. Such notice will: identify the event causing the delay or anticipated delay; estimate the anticipated length of delay, including necessary demobilization and re-mobilization; state the measures taken or to be taken to minimize the delay; and estimate the timetable for implementation of the measures. Respondents will take all reasonable measures to avoid and minimize the delay. Failure to comply with the notice provision of this Section will be grounds for U.S. EPA to deny Respondents an extension of time for performance. Respondents will have the burden of demonstrating by a preponderance of the evidence that the event is a force majeure, that the delay is

warranted under the circumstances, and that best efforts were exercised to avoid and mitigate the effects of the delay.

If U.S. EPA determines a delay in performance of a requirement under this Order is or was attributable to a force majeure, the time period for performance of that requirement will be extended as deemed necessary by U.S. EPA. Such an extension will not alter Respondents' obligation to perform or complete other tasks required by the Order which are not directly affected by the force majeure.

X. STIPULATED AND STATUTORY PENALTIES

For each day, or portion thereof, that Respondents fail to fully perform any requirement of this Order in accordance with the schedule established pursuant to this Order, Respondents will be liable as follows:

Deliverable/Activity	Penalty For Days 1-7	Penalty For More Than 7 Days
Failure to Submit a Draft or Revised Work Plan	$750/Day	$2,000/Day
Late Submittal of Progress Reports or Other Miscellaneous Reports/Submittals	$200/Day	$500/Day
Failure to Meet any Scheduled Deadline in the Order	$200/Day	$500/Day
Failure to Meet of the Operation and Maintenance Requirements, if applicable	$200/Day	$500/Day

Upon receipt of written demand by U.S. EPA, Respondents will make payment to U.S. EPA within twenty days and interest will accrue on late payments in accordance with Section VII of this Order (Reimbursement of Costs).

Even if violations are simultaneous, separate penalties will accrue for separate violations of this Order. Penalties accrue and are assessed per violation per day. Penalties will accrue

regardless of whether EPA has notified Respondents of a violation or act of noncompliance. The payment of penalties will not alter in any way Respondents' obligations to complete the performance of the work required under this Order. Stipulated penalties will accrue, but need not be paid, during any dispute resolution period concerning the particular penalties at issue. If Respondents prevail upon resolution, Respondents will pay only such penalties as the resolution requires. In its unreviewable discretion, U.S. EPA may waive its rights to demand all or a portion of the stipulated penalties due under this Section. Such a waiver must be made in writing.

Violation of any provision of this Order may subject Respondents to civil penalties of up to $27,500 per violation per day, as provided in Section 106(b)(1) of CERCLA, 42 U.S.C. §9606(b)(1). Respondents may also be subject to punitive damages in an amount up to three times the amount of any cost incurred by the United States as a result of such violation, as provided in Section 107(c)(3) of CERCLA, 42 U.S.C. §9607(c)(3). Should Respondents violate this Order or any portion hereof, U.S. EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. §9604, and/or may seek judicial enforcement of this Order pursuant to Section 106 of CERCLA, 42 U.S.C. §9606.

XI. RESERVATION OF RIGHTS

Except as specifically provided in this Order, nothing herein will limit the power and authority of U.S. EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein will prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this Order. U.S. EPA also reserves the right to take any other legal or equitable action as it deems appropriate and necessary, or to require the Respondents in the future to perform additional activities pursuant to CERCLA or any other applicable law. Except as specifically provided in this Order, Respondents reserve the right to assert any factual or legal position in any action taken by U.S. EPA or the United States under this Article XI.

XII. OTHER CLAIMS

By issuance of this Order, the United States and U.S. EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents. The United States or U.S. EPA will not be a party or be held out as a party to any contract entered into by the Respondents or their directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out activities pursuant to this Order. Each party will bear its own costs and attorneys fees in connection with the action resolved by this Order.

Except as expressly provided in Section XIII (Covenant Not To Sue), nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against the Respondents or any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or the common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106(a) or 107(a) of CERCLA, 42 U.S.C. §§9606(a), 9607(a).

This Order does not constitute a preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. §9611(a)(2). The Respondents waive any claim to payment under Sections 106(b), 111, and 112 of CERCLA, 42 U.S.C. §§9606(b), 9611, and 9612, against the United States or the Hazardous Substance Superfund arising out of any action performed under this Order. No action or decision by U.S. EPA pursuant to this Order will give rise to any right to judicial review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. §9613(h).

XIII. COVENANT NOT TO SUE

Except as otherwise specifically provided in this Order, upon issuance of the U.S. EPA notice referred to in Section XVII (Notice of Completion), U.S. EPA covenants not to sue Respondents for judicial imposition of damages or civil penalties or to take administrative action against Respondents for any failure to perform removal actions agreed to in this Order except as otherwise reserved herein.

Except as otherwise specifically provided in this Order, in consideration and upon Respondents' payment of the response costs specified in Section VII of this Order, U.S. EPA covenants not to sue or to take administrative action against Respondents under Section 107(a) of CERCLA, 42 U.S.C. §9607(a), for recovery of past and oversight costs incurred by the United States in connection

with this removal action and this Order. This covenant not to sue will take effect upon the receipt by U.S. EPA of the payments required by Section VII (Reimbursement of Costs).

These covenants not to sue are conditioned upon the complete and satisfactory performance by Respondents of their obligations under this Order. These covenants not to sue extend only to the Respondents and do not extend to any other person.

XIV. CONTRIBUTION PROTECTION

With regard to claims for contribution against Respondents for matters addressed in this Order, the Parties hereto agree that the Respondents are entitled to protection from contribution actions or claims to the extent provided by Section 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§9613(f)(2) and 9622(h)(4).

Nothing in this Order precludes Parties from asserting any claims, causes of action or demands against any persons not parties to this Order for indemnification, contribution, or cost recovery.

XV. INDEMNIFICATION

Respondents agree to indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action: (A) arising from, or on account of, acts or omissions of Respondents and Respondents' officers, heirs, directors, employees, agents, contractors, subcontractors, receivers, trustees, successors or assigns, in carrying out actions pursuant to this Order; and (B) for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between (any one or more of) Respondents, and any persons for performance of work on or relating to the Site, including claims on account of construction delays. Nothing in this Order, however, requires indemnification by Respondents for any claim or cause of action against the United States based on negligent action taken solely and directly by U.S. EPA (not including oversight or approval of plans or activities of the Respondents).

XVI. MODIFICATIONS

Modifications to any plan or schedule may be made in writing by the RPM or at the RPM's oral direction. If the RPM makes an oral modification, it will be memorialized in writing within 7 business days; however, the effective date of the modification will be the date of the RPM's oral direction. Any other

requirements of this Order may be modified in writing by mutual agreement of the parties.

If Respondents seek permission to deviate from any approved plan or schedule, Respondents' Project Coordinator will submit a written request to U.S. EPA for approval outlining the proposed modification and its basis.

No informal advice, guidance, suggestion, or comment by U.S. EPA regarding reports, plans, specifications, schedules, or any other writing submitted by the Respondents will relieve Respondents of their obligations to obtain such formal approval as may be required by this Order, and to comply with all requirements of this Order unless it is formally modified.

XVII. NOTICE OF COMPLETION

When U.S. EPA determines, after U.S. EPA's review of the Final Report, that all work has been fully performed in accordance with this Order, except for certain continuing obligations required by this Order (e.g., record retention, payment of costs), U.S. EPA will provide written notice to the Respondents. If U.S. EPA determines that any removal activities have not been completed in accordance with this Order, U.S. EPA will notify the Respondents, provide a list of the deficiencies, and require that Respondents modify the Work Plan if appropriate to correct such deficiencies. The Respondents will implement the modified and approved Work Plan and will submit a modified Final Report in accordance with the U.S. EPA notice. Failure to implement the approved modified Work Plan will be a violation of this Order.

XVIII. SEVERABILITY

If a court issues an order that invalidates any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order, Respondents will remain bound to comply with all provisions of this Order not invalidated by the court's order.

XIX. EFFECTIVE DATE

This Order will be effective upon receipt by NL of a copy of this Order signed by the Director, Superfund Division, U.S. EPA Region V.

IN THE MATTER OF:

Master Metals, Inc.,
Superfund Site,
Cleveland, Ohio

SIGNATORIES

Each undersigned representative of a signatory to this Administrative Order on Consent certifies that he or she is fully authorized to enter into the terms and conditions of this Order and to bind such signatory, its successors and assigns, to this document.

Agreed this _____ day of _____,_____.

By: _____
(Signature)

Name: _____

Position: _____

Signatory: _____

IN THE MATTER OF:

Master Metals, Inc.,
Superfund Site,
Cleveland, Ohio

IT IS SO ORDERED AND AGREED

BY:_____ DATE:_____

William E. Muno, Director
Superfund Division
United States
Environmental Protection Agency
Region 5

Attachment A - Respondents

NL Industries, Inc.
Alcolac, Inc.
Alpha Metals, Inc.
American National Can Company (n/k/a Rexam Beverage Can Company)
American Spring Wire Corp.
Anchor Swan, Inc. (by Dayco Products, LLC, successor-in-interest)
Anzon, Inc. (n/k/a AI Divestitures, Inc.)
Arcon Equipment Inc.
Atlantic Battery Corp./Power Battery Co., Inc.
ATR Wire & Cable Co. Inc.
Central Can Company
Crown Cork & Seal Company, Inc. (on its own behalf and on behalf of Dames Can Company)
E.I. du Pont de Nemours and Company (Remington Arms Company, DuPont Company Subsidiaries)
Estwing Manufacturing Company
Federated-Fry Metals, Inc.
Fusion Incorporated
General Dynamics/Electric Boat Corporation
GHR Recycling Inc.
The Goodyear Tire & Rubber Company
Gould Electronics Inc.
Heekin Can, Inc. (n/k/a Ball Metal Food Container Corp.)
Johnson Controls Battery Group, Inc., on behalf of itself and Johnson Controls, Inc.
Lenox, Incorporated
Mark C. Pope Associates, Inc.
Matsushita Display Devices Company of America
Miami Industrial Trucks, Inc.
Morgan Advanced Ceramics, Inc.
New York State Thruway Authority
OHM Resource Recovery Corp. (by Advanced Environmental Tech Services, LLC
Owens-Illinois, Inc. (predecessor-in-interest to OI-NEG TV Products, Inc, and Techneglas, Inc., successor-in-interest to OI-NEG TV Products, Inc.)
Philips Electronics North America Corporation on behalf of Philips Display Components Company
Piezo Kinetics, Inc.
REL TEC Communications, Inc. (n/k/a Marconi Communications, Inc.)
Sam Allen & Son, Inc. (n/k/a Newman/Allen Enterprises, Inc.)
Seneca Wire & Manufacturing Company
Sony Electronics Inc.
St. George Crystal, Ltd.
Teknor Apex Company
Thomson Multimedia Inc.

Toshiba Display Devices, Inc.
Unisys Corporation (successor to Sperry Corporation)
United States Can Company
United States Steel Corporation
Vernitron Corp. (n/k/a Axsys Technologies, Inc.)
Victory White Metal
Zenith Electronics Corporation (Rauland Division)

Attachment B - Limited Respondents for Operation and Maintenance Only

Northern Ohio Lumber & Timber Co.
Bredt-Zanick LLC

Statement of Work
for the Design/Construction and Clean-up
at the Master Metals Inc., Superfund Site
Cuyahoga County, Cleveland, Ohio

I. PURPOSE

The purpose of this Statement of Work (SOW) is to set forth requirements for implementation of the clean up actions set forth in the Change of Project Scope Action Memorandum, which was signed by the Superfund Division Director, U.S. EPA Region 5, September 22, 2000, for the Master Metals Superfund Site ("Site"). The Respondents must follow the Action Memorandum, the SOW, the approved Work Plans, addendum to Work Plan, the approved Clean-Up Work Plans, U.S. EPA Superfund Guidance, and any additional guidance provided by U.S. EPA in submitting deliverables for designing and implementing the clean-up activities at the site.

II. DESCRIPTION OF THE CLEAN-UP ACTIVITIES/PERFORMANCE STANDARDS

Respondents must design and implement the non-time critical removal action (NTCRA) to meet the performance standards and specifications set forth in the EE/CA, Action Memorandum, Administrative Order on Consent (AOC), and this SOW. Performance standards must include cleanup standards, standards of control, construction quality criteria and other substantive requirements, criteria or limitations including all identified Applicable or Relevant and Appropriate Requirements (ARARs) set forth in the EE/CA, Action Memorandum, AOC, and this SOW.

The Cleanup Standards required in this SOW are listed in the table below:

CLEANUP LEVELS		
Contaminant of Concern	Soil Cleanup Level	Basis for Soil Cleanup Level
Lead	1,000 mg/kg	risk-based remediation goal (RBRG)

*NOTE: The cleanup must be confirmed by a demonstration as specified in paragraph 6 of this SOW that the cleanup levels in the above table have been reached and that the levels of the above-listed contaminant remaining at the site fall below the upper bound of the 95% upper confidence limit on the mean of the measured data, evaluated as a function of the contaminant concentrations and receptor populations exposed. Refer to the *Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive: 9285.7-081, May 1992.*

The response action selected to mitigate threats associated with the Master Metals Site must consist of the following tasks:

1. Construction, Installation, and Operation of a Containment System for Removal Action

1.1 Excavation and Treatment of Contaminated Soil

The Respondents must excavate and treat all soil that contains lead that exceeds a concentration of 1000mg/kg until the historic slag is encountered. Treatment must involve the lead stabilization process. The Respondents must perform the lead stabilization treatment process in secondary

containers. The Respondents must treat the contaminated soil to meet the following performance standards: Respondents must excavate all soil that is not under the cover system[1] and that exceeds the risk goal for the site (and is not historic slag) and treat that soil to the Land Disposal Restrictions (LDR), Alternative Performance Standards, 40 C.F.R. 268.49(c)(1)(B)(C):

(*c) Treatment standards for contaminated soils. Prior to land disposal, contaminated soil identified as needing to comply with LDRs must be treated according to all the standards specified in this paragraph or according to the Universal Treatment Standards (UTS) specified in 40 C.F.R. 268.48. (1) All soils. Prior to land disposal, all constituents subject to treatment must be treated as follows: (B) For metals, treatment must achieve 90 percent reduction in constituent concentrations as measured in leachate from the treated media (tested according to the TCLP) or 90 percent reduction in total constituent concentrations (when a metal removal treatment technology is used) except as provided by paragraph (c) (1) (C) of this section. (C) When treatment of any constituent subject to treatment to a 90 percent reduction standard would result in a concentration less than 10 times the (UTS) for that constituent, treatment to achieve constituent concentration less than 10 times the UTS is not required.*

After treatment, if necessary, Respondents must consolidate the soil on-site underneath the cover system. Before excavating perimeter soil, workers must clear vegetation and remove the site fence. The Respondents must replace the excavated soils with clean soil, plant the perimeter with new vegetation, and replace the fence. The Respondents should take action to ensure proper drainage to eliminate any run-off onto, or from the site. Respondents must backfill to grade all areas excavated or subgraded on-site.

1.2 Containment Cover System

The Respondents must design and construct a containment cover, "cover system" to eliminate the potential for exposure to lead contaminated soils on the site. The following material may be consolidated under the cover: treated material excavated from the perimeter of the site and the treated Holmden Ave soils stockpiled on site "awaiting ultimate disposal." After consolidation of the material, Respondents must cover the consolidated material with a cap to prevent exposure to the materials, as specified in the removal design/removal action work plan that must be submitted for approval by U. S.EPA.

The Respondents must backfill to grade all areas of the site that have been excavated or are subgraded. Only the most severely deteriorated portions of the site must be placed under the cover system; other areas (under the existing concrete) not covered with the cover system, must be reconditioned by sealing the cracks, followed by scarification or encapsulation of the concrete surface. Specifics on the cover system (including a cross section and designation of the areas where the treated material must be placed) must be provided in the removal design/removal action work plan. The Limited Respondents must conduct routine maintenance of the cover as part of the long term requirements to be established in the Operation and Maintenance (O&M) Plan.

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[1] This excludes the western perimeter areas excavated during the approved Phase I Time Critical Removal, where the risk goal had been achieved, or the historic slag was encountered. This excluded western portion of the site that is presently below grade needs to be re-graded with clean material and appropriately sloped to prevent potential "run-on" to the site and "run-off " from the site.

Once, Northern Ohio Lumber and Timber Company (NOLTCO) acquires the site, Respondents must place the consolidated treated soils underneath an asphalt cover system, engineered (with the necessary thickness and load-bearing capacity) to permit appropriate reuse. See Section V-2 of the Administrative Order. The Respondents must recondition the other areas of the existing concrete not covered with the asphalt cover system, by sealing the cracks, followed by scarification or encapsulation of the concrete surface. The Respondents must backfill to grade all areas of the site that have been excavated or are subgraded. As specified in the removal design, treated soil, including that from Holmden Properties awaiting "ultimate disposal" may be consolidated under the asphalt for grading purposes. A geotextile membrane must be placed between the treated soil and any clean fill used for grading purposes, as appropriate. Specifics on the cover system (including a cross section and designation of the areas where the treated material must be placed) must be provided in the removal design plan submitted by the Respondents for approval by U. S. EPA.

The Respondents must dispose of excavated soil not consolidated on the site at a hazardous or solid waste disposal facility, as appropriate. The Limited Respondents must conduct routine maintenance of the cover as part of the long term requirements to be established in the Operation and Maintenance (O&M) Plan.

1.3 Excavation Locations

The Respondents must excavate all areas not under the cover system or existing concrete surface which exceeds the risk goal for the site (and is not historical slag) and treat that soil to Land Disposal Restrictions (LDR) Alternative Performance Standards, 40 C.F.R. 268.49(c)(1)(B)(C). Specific locations must be determined in the preliminary design studies. All perimeter areas should also be addressed; the extent of the perimeter areas inside and outside the current fence line is specified below.

1.3.1. The extent of the perimeter areas outside the current fence line that do not meet the risk goal for the Site[2] are as follows:

1.3.1.1. The eastern perimeter areas extend to the curb of West Third Street. The eastern perimeter areas to be excavated include sample locations "X-1 through X-9".

1.3.1.2. The southern perimeter areas extend to the curb of West Third Street. The southern area to be excavated includes sample locations "X-9 through X-13".

1.3.1.3. The western perimeter areas extend to where there is visual evidence of the divide between the manufacturing operations of the Master Metals facility and the eastern edge of the adjoining railroad spur. The western perimeter areas to be excavated include sample locations "X-13 through X–19" .

[2]All sampling locations, grids, and analytical results referenced in Section 1.3.1 are those identified in the November 1998 Master Metals EE/CA.

1.3.2. The extent of the perimeter areas inside the current fence line that do not meet the risk goal for the Site[3] are as follows:

1.3.2.1. The southern perimeter areas excavated during the Phase 1 TCR where sand/gravel was encountered (grids DD1, DD2, FF1, FF2, GG1, GG2 and HH1) need to be excavated until the risk goal for the site is achieved.[4]

1.3.2.2. The western perimeter excavated areas where the grids contained slag need not be further remediated (as the risk goal for the site was met in these areas). The excavated areas where the white sludge was encountered (grids I1, J1, and K1) may need to be addressed to achieve the risk goal for the site, as appropriate.[4]

2. Waste Streams

Other waste streams must be disposed of at an approved landfill. These waste streams include but are not limited to: personnel protective gear; soils/solids resulting from decontamination of equipment, additional investigations, and construction of response systems; and other, not yet anticipated, on- site solid waste streams.

3. Post-excavation Sampling Analysis

Respondents must conduct post-excavation sampling analysis of soils in all excavated areas for documentation of the site conditions before backfilling. A soil analysis must be documented of the soil used for backfilling to be free of contaminants.

4. Soil Clean-up Verification Reports

Soil Clean-up Verification Reports must identify the number of samples and provide the basis for the selection of sample locations, depths, and total numbers such that the site is adequately characterized, post-remediation. The verification report must include the following:

4.1. **MAPS AND CROSS SECTIONS**

Provide a scaled map of the excavation with sample grid and sample locations identified. Appropriate cross section should depict the stratigraphy, fractures, soil types, and final depth and elevations of the excavation.

4.2. **SAMPLE LOCATION RATIONALE**

4.2.1 Rationale/basis for selection of sample location, depth, sample numbers**.**

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[3]Sampling locations/grids are those identified in the October 8, 1997 letter from ENTACT requesting a modification to the Phase I Time Critical Removal (TCR) Work Plan

[4]If sand was used instead of a soil backfill in these areas, this may need to be assessed during the removal design to ascertain if the required load bearing capacity is achieved, in the event of site re-use.

4.2.2. Properly label and identify the sampling grid stations (map) including background stations.
4.2.3. Sample Depths
4.2.4. Sample Collection Procedures.
4.2.5. Results of all tests to determine clean closure.

4.3. **DATA ANALYSIS**

4.3.1. Analytical parameters
4.3.2. Analytical methods used.
4.3.3. Method detection limits
4.3.4. Laboratory Quality Assurance/Quality Control

5. STATISTICAL ANALYSES

5.1 Explanation and calculation of upper bound of 95% confidence interval.
5.2. Statistical comparison of sampling results to cleanup levels.
5.3. Lab results.

6. Additional information to support closure

The Respondents must backfill all excavated areas with clean soil to present grade, and design the backfilling with consideration for future site use, as appropriate, and prevention of soil erosion. The Respondents must provide additional information regarding residual risks as a function of the spatial correlation of sample values, for both present and future land uses.

7. Removal and Disposal of General Debris

During clean-up of the various source areas of the site, general debris and interfering structures must be removed. The Respondents must dispose the removed debris off-site.

8. Site Security

The Respondents must ensure the site is secure before, during, and after removal activities. All site security which is currently in place must be maintained. This includes replacement of the fence with an industrial grade fence topped with three strands of barb wire.

9. Monitoring and Testing Program for Removal Action

The parameter which Respondents must analyze for in the monitoring is: lead. The Respondents must implement an air monitoring program to evaluate and ensure the construction and implementation of the clean-up action complies with the approved plans, design documents, and performance standards. Air monitoring must be conducted by the Respondents just prior to commencement of the removal action and during the removal action. The Respondents must use the results of monitoring conducted just before the start of the removal action to establish the baseline (i.e., background) levels. The baseline monitoring must be conducted on a regular basis (minimum four times daily) for a full work week (Monday through Friday) prior to initiation of excavation or demolition activities.

The Respondents must monitor fugitive air emissions from soil excavation, handling, and backfilling operations. Fugitive particulate at the property boundary locations must be monitored in accordance with the Health and Safety Plan.

The particulate concentrations at the property boundary must not exceed the following action levels without employing particulate control measures. The action level for particulate concentrations is 187.5 $\mu g/m^3$, which is one-half of the 24 hour National Ambient Air Quality Standards (NAAQS) for particulate exposure (150 $\mu g/m^3$) converted to an one-hour averaging period. The conversion factor used is 2.5 (1/0.4). However, these action levels are established to determine when mitigation measures are necessary to protect the public. Removal activities should use the best management practices for dust suppression, regardless of the maximum allowable limit, and should include modifying work methods or utilizing engineering controls.

Respondents must use a total of four sampling stations. The air samples must be collected using the General Metal Works Model GPS-1, or sample equivalent. At a minimum, one upwind and two downwind sampling locations must be utilized. As necessary, based upon the complexity of the site removal activities and the magnitude and direction of wind related to the potential off- receptors, a third downwind sample station must be collected. Sampling locations must be established immediately inside the perimeter of the area where the excavation is taking place.

Analytical results must be made available to U. S. EPA in a preliminary form within 5 working days from the receipt of the sample by the approved laboratory.

The public in Cleveland has voiced a high level of concern over activities at this site and has requested to be notified when site cleanup activities begins. Respondents may be called upon by U.S. EPA to either conduct or assist in community relations activities at the Site. Respondents must assist U.S. EPA in community relations upon request from U.S. EPA.

10. Monitoring Well and Borehole Abandonment

Boreholes that were not completed as monitoring wells and monitoring wells that are no longer being utilized for ground water quality sampling or ground water level measurements must be abandoned properly to ensure public safety. Well/borehole abandonment must consist either of a method for well removal and simultaneous grouting of the borehole with bentonite, neat cement or a bentonite/cement mixture, or a method for routing the well in-place that ensures the complete sealing of the well. Respondents must refer to the Ohio EPA's Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring Programs, June 1993, chapter 9 for further instructions/requirements on the proper abandonment of monitoring wells for the state of Ohio.

III. SCOPE OF REMOVAL DESIGN AND REMOVAL CLEAN-UP ACTION

The Design/Clean-Up Action must consist of the following seven tasks. All plans are subject to U.S. EPA approval. Depending on the site-specific considerations and the level of detail provided when completing the initial tasks, one or more of the following tasks may be streamlined with the prior approval by U.S. EPA

Task 1: Removal Design Work Plan

Task 2: Removal Design Phases

1. Preliminary Design
2. Intermediate Design
3. Prefinal Design/Final Design

Task 3: Removal Action Work Plan

A. Work Plan - Overall Strategy
B. Quality Assurance Project Plan
C. Field Sampling Plans
D. Health and Safety Plan
E. Construction Quality Assurance Plan

Task 4: Prepare Work Plan Addendum

A. Plans and/or Maps showing extent of excavation to be conducted
B. Health and Safety Plan for Removal Action, must include air monitoring program requirement and a contingency plan
C. A proscribed truck route
D. Soil excavation and handling procedures
E. Results of all pre-removal sampling
F. QAPP modifications as necessary to address sampling and analysis conducted during and after the removal
G. Plan for Post-removal site control
H. Removal Action Schedule with Major Milestones

Task 5: Implement Clean-Up Actions/Construction

A. Pre-construction Meeting
B. Pre-final Inspection
C. Final Inspection
D. Reports
    1. Monthly Progress Reports
    2. Completion of Removal Action Report

Task 6: Operation and Maintenance

Task 7: Performance Monitoring

Task 1: Removal Design Work Plan

The Respondents must submit a Work Plan which documents the overall management strategy for performing the design, construction, operation, maintenance and monitoring of Removal Actions for U.S. EPA review and approval. The plan must document the responsibility and authority of all organizations and key personnel involved with the implementation and must include a description of qualifications of key personnel directing the Removal Design, including contractor personnel. The Work Plan must also contain a schedule of Removal Design activities. The Respondents must submit a Removal Design Work Plan in accordance with Section V, paragraph 2.1 (Work Plan and Implementation) of the AOC and Section III of this SOW.

This removal design must require pre-design studies to provide information necessary to fully implement the removal design and removal action. This Removal Design Work Plan must include, at a minimum, a pre-design QAPP, Health and Safety Plan, Field Sampling Plan, a schedule, closure of the existing ground water monitoring wells, and a survey to delineate the extent of the lead excavated area post removal associated with the eastern, western, and southern boundary of the site.

Task 2: Removal Design Phases

The Respondents must prepare construction plans and specifications to implement the Removal Actions at the Site as described in the EE/CA and this SOW. The Respondents must submit plans and specifications in accordance with the schedule set forth in Section VI below. Subject to approval by U.S. EPA, Respondents may submit more than one set of design submittals reflecting different components of the Removal Action. Respondents must develop all plans and specifications in accordance with ***U.S. EPA's Superfund Remedial Design and Remedial Action Guidance (OSWER Directive No. 9355.0-4A)***, and must demonstrate that the Removal Action must meet all objectives of the EE/CA , the Action Memorandum, the AOC, and this SOW, including all Performance Standards. Respondents must meet regularly with U.S. EPA to discuss design issues.

2.1. Preliminary Design

Respondents must submit the Preliminary Design when the design effort is approximately 30 % complete. The Preliminary Design submittal must include or discuss, at a minimum, the following:

2.1.1. Preliminary plans, drawings, and sketches, including design calculations;
2.1.2. Results of treatability studies and additional field sampling;

2.1.3. Design assumptions and parameters, including design restrictions, process performance criteria, appropriate unit processes for the treatment train, and expected removal or treatment efficiencies for both the process and waste (concentration and volume);

2.1.4. Proposed cleanup verification methods, including compliance with Applicable or Relevant and Appropriate Requirements (ARARs);

2.1.5. Outline of required specifications;

2.1.6. Proposed siting/locations of processes/construction activity;

2.1.7. Expected long-term monitoring and operation requirements;

2.1.8. Real estate, easement, and permit requirements;

2.1.9. Preliminary construction schedule, including contracting strategy.

2.2. Intermediate Design

Respondents must submit the Intermediate Design when the design effort is approximately 60 % complete. The Intermediate Design must fully address all comments made to the preceding design submittal. The

Intermediate Design submittal must include those elements listed for the Preliminary Design, as well as the following:

2.2.1 Draft Performance Standard Verification Plan;

2.2.2. Draft Construction Quality Assurance Plan;

2.2.3. Draft Quality Assurance Performance Plan (QAPP);

2.2.4. Draft Health and Safety Plan;

2.2.5. Draft Field Sampling Plan (FSP);

2.2.6. Draft Contingency Plan

2.3. Pre-final and Final Designs

Respondents must submit the Pre-final Design when the design effort is 95% complete and must submit the Final Design when the design effort is 100% complete. The Pre-final Design must fully address all comments made to the preceding design submittal. The Final Design must fully address all comments made to the Pre-final Design and must include reproducible drawings and specifications suitable for bid advertisement. The Pre-final Design will serve as the Final Design if U.S. EPA has no further comments and issues the notice to proceed. The Pre-final and Final Design submittals must include those elements listed for the Preliminary Design, as well as, the following:

2.3.1. Final Performance Standard Verification Plan;

2.3.2. Final Construction Quality Assurance Plan;

2.3.3. Final QAPP;

2.2.4. Final H & S Plan;

2.2.5. Final FSP;

2.2.6. Final Contingency Plan;

2.2.7. Draft Operation and Maintenance Plan;

2.2.8. Capital and Operation and Maintenance Cost Estimate. This cost estimate must be refined to reflect the details presented in the Final Design;

2.2.9. Final Project Schedule for the construction and implementation of the Removal Action which identifies timing for initiation and completion of all critical path tasks. The final project schedule submitted as part of the Final Design must include specific dates for completion of the project and major milestones.

Task 3: Removal Action Work Plan

3.1. Work Plan - Overall Strategy

The Respondents must submit a Work Plan which includes a statement of the problem(s) and potential problem(s) posed by the site and how the objectives of the completed removal action must address the problem(s) as well as a detailed description of the remediation and construction activities. The removal action work plan must include a project schedule for each major activity and submission of deliverables generated during the Removal Action. The Respondents must submit a Removal Action Work Plan in accordance with Section V paragraph 2.1 of the AOC and Section III of this SOW.

3.1.1 A detailed description of the design and construction activites,

3.1.2. A detail description of operations and maintenance;

3.1.3. A detail description of performance monitoring;

3.1.3. A description of the overall management strategy;

3.1.4. The work plans must describe the types of pre-removal activities to be conducted prior to solicitation of a removal subcontractor;

3.1.5. The work plan must document the responsibility and authority of all organizations and key personnel involved with the implementation;

3.1.6. The plan must include a description of qualifications of key personnel directing the Design, and the contractor personnel;

3.1.7. The work plans must also contain a schedule of all the above activities;

3.1.8. The Work Plan must include a detailed description of the technical approach for the remediation and construction activities in accordance with the final design and the EE/CA.

3.1.9. The work plan must specify the necessary procedures, inspections, deliverables;

3.1.10. A comprehensive construction management schedule for completion of each major activity and submittal must also be included.

3.2. Quality Assurance Project Plan (QAPP)

The Respondents must develop a site specific Quality Assurance Project Plan (QAPP), covering sample analysis and data handling for samples collected in all phases of the future work, based upon the AOC and guidance provided by U.S. EPA. The QAPP must be consistent with the requirements of the EPA Contract Lab Program (CLP) for laboratories proposed outside the CLP. The QAPP must at a minimum include:

3.2.1. Project Description
3.2.1.1 Facility Location History
3.2.1.2 Past Data Collection Activity

3.2.2. Project Scope

3.2.3. Sample Network Design

3.2.4. Parameters to be Tested and Frequency

3.2.5. Project Schedule

3.2.5. Sampling Procedures

3.2.5.1. Sample Custody
- 3.2.5.1.1. Field Specific Custody Procedures
- 3.2.5.1.2. Laboratory Chain of Custody Procedures

3.2.5.2. Calibration Procedures and Frequency
- 3.2.5.2.1. Field Instruments/Equipment
- 3.2.5.2.2. Laboratory Instruments

3.2.5.3. Analytical Procedures
- 3.2.5.3.1 Non-Contract Laboratory Program

3.2.5.4. Analytical Methods
- 3.2.5.4.1. Field Screening and Analytical Protocol
- 3.2.5.4.2. Laboratory Procedures

3.2.5.5. Internal Quality Control Checks
- 3.2.5.5.1. Field Measurements
- 3.2.5.5.2. Laboratory Analysis

3.2.5.6. Data Reduction, Validation, and Reporting
- 3.2.5.6.1. Data Reduction
- 3.2.5.6.2. Data Validation
- 3.2.5.6.3.Data Reporting

3.2.5.7. Performance and System Audits
- 3.2.5.7.1. Internal Audits of Field Activity
- 3.2.5.7.2. Internal Laboratory Audit
- 3.2.5.7.3. External Field Audit
- 3.2.5.7.4. External Laboratory Audit

3.2.5.8. Preventive Maintenance
- 3.2.5.8.1. Routine Preventative Maintenance Procedures and Schedules
- 3.2.5.8.2. Field Instruments/Equipment
- 3.2.5.8.3. Laboratory Instruments

3.2.5.9. Specific Routine Procedures to Assess Data Precision, Accuracy, and Completeness
- 3.2.5.9.1. Field Measurement Data
- 3.2.5.9.2. Laboratory Data

3.2.5.10. Corrective Action

3.2.5.10.1. Sample Collection/Field Measurement

3.2.5.10.2. Laboratory Analysis

3.2.5.11. Quality Assurance Reports to Management

3.3. Field Sampling Plan

The Respondents must develop a field sampling plan in accordance with the ***Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, October 1988.*** The Field Sampling Plan should supplement the QAPP and address all sample collection activities.

3.4. Health and Safety Plan

The Respondents must develop a health and safety plan which is designed to protect on- site personnel and area residents from physical, chemical and all other hazards posed by this removal action. The safety plan must develop the performance levels and criteria necessary to address the following areas.

3.4.1. Facility Description
3.4.2. Personnel
3.4.3. Levels of protection
3.4.4. Safe work practices and safe guards
3.4.5. Medical surveillance
3.4.6. Personal and environmental air monitoring
3.4.7. Personal protective equipment
3.4.8. Personal hygiene
3.4.9. Decontamination - personal and equipment
3.4.10. Site work zones
3.4.11. Contaminant control
3.4.12. Contingency and emergency planning
3.4.13. Logs, reports and record keeping

The safety plan must follow U.S. EPA guidance and all OSHA requirements as outlined in 29 CFR 1910 and 1926.

Contingency Plan (Stand alone or in H & S)

The Respondents must submit a Contingency Plan in accordance with 40 CFR 300.150 of the National Contingency Plan describing procedures to be used in the event of an accident or emergency at the Site. The draft Contingency Plan must be submitted with the pre-final design and the draft final Contingency Plan must be submitted with the final design. The final Contingency Plan must be submitted prior to the start of construction, in accordance with the approved construction schedule. The Contingency Plan must include, at a minimum, the following:

3.5. Name of the person or entity responsible for responding in the event of an emergency incident.

3.6. Plan and date(s) for meeting(s) with the local community, including local, State and Federal agencies involved in the cleanup, as well as local emergency squads and hospitals.

3.7 First aid medical information.

3.8 Air Monitoring Plan.

3.9. Spill Prevention, Control, and Countermeasures (SPCC) Plan (if applicable), as specified in 40 CFR Part 109 describing measures to prevent and contingency plans for potential spills and discharges from materials handling and transportation.

3.10. Construction Quality Assurance Plan

Respondents must submit a Construction Quality Assurance Plan (CQAP) which describes the Site specific components of the quality assurance program which must ensure that the completed project meets or exceeds all design criteria, plans, and specifications. The draft CQAP must be submitted with the prefinal design and the "draft" final CQAP must be submitted with the final design. The Respondents must submit the final CQAP prior to the start of construction in accordance with the approved construction schedule. The CQAP must contain, at a minimum, the following elements:

3.10.1. Responsibilities and authorities of all organizations and key personnel involved in the design and construction of the Removal Action.

3.10.2. Qualifications of the Quality Assurance Official to demonstrate he possesses the training and experience necessary to fulfill his identified responsibilities.

3.10.3. Protocols for sampling and testing used to monitor construction.

3.10.4. Identification of proposed quality assurance sampling activities including the sample size, locations, frequency of testing, acceptance and rejection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation. A description of the provisions for final storage of all records consistent with the requirements of the Consent Decree must be included.

3.10.5. Reporting requirements for CQA activities must be described in detail in the CQA plan. This must include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all records must be presented in the CQA plan.

Task 4: Prepare Work plan Addendum

Respondents must prepare a Removal Design/Removal Action Work plan Addendum which must consist of:

4.1. Construction plans and specifications to implement the Clean-Up Actions at the Site as described in the Action Memo and this SOW such as plans and/or maps showing the extent of excavation to be conducted and the proposed locations of construction activity.

4.2. Health and Safety Plan to be utilized during the removal action including provisions for air monitoring, contingency planning, decontamination pad construction, maintenance, and procedures for trucks leaving the site.

4.3. An approved truck route.

4.4. Soil excavation and handling procedures.

4.5. Removal action schedule with major milestones identified.

4.6. The results of all conducted pre-removal sampling and analysis.

4.7. Any other submittals from the original work plan which require modification such as the QAPP must now describe sampling to be conducted during and after the removal action.

Task 5: Implement Removal Actions/Construction

Plans and specifications must be submitted in accordance with the schedule set forth below in Section IV of this SOW. Subject to approval by U.S. EPA, Respondents may submit more than one set of submittals reflecting different components of the Removal Action. All plans and specifications must be developed in accordance with professional engineering practices and must demonstrate that the removal action must meet all objectives of the EE/CA, Action Memo, the AOC and this SOW, including all Performance Standards. Respondents must meet regularly with U.S. EPA as necessary to resolve any design issues.
The Respondents must implement the Clean-Up Action(s) as detailed in the approved Final Removal Design. Respondents must complete the following activities in constructing the Removal Action.

5.1. Preconstruction inspection(s) and meeting(s).

The Respondents mus participate with the U.S. EPA and Ohio EPA in a pre-construction inspection meeting to:

5.1.1 Review methods for documenting and reporting inspection data;

5.1.2. Review methods for distributing and storing documents and reports;

5.1.3. Review work area security and safety protocol;

5.1.3. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed;

5.1.4. Conduct a Site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

5.1.5 The preconstruction inspection and meeting must be documented by a designated person and minutes must be transmitted to all parties.

5.2. Pre-final inspection:

The Respondents must notify the U.S. EPA for the purposes of conducting a pre-final inspection within 30 days after Respondents makes a preliminary determination that construction is complete. The inspection is to determine whether the project is complete and consistent with the contract documents and the Removal/Clean-Up Action. The pre-final inspection must consist of:

5.2.1. A walk-through inspection of the entire Facility affected by the clean-up with U.S. EPA and Ohio EPA.

5.2.2. Identify and note any outstanding construction items discovered during the inspection.

5.3. The pre-final inspection report must:

5.3.1. Outline the outstanding construction items and document corrective actions required to resolve the items

5.3.2. Completion date for the documented corrective actions

5.3.3. Provide a proposed date for the final inspection

5.4. Final inspection

Within 30 days after completion of any work identified in the pre-final inspection report, the Respondents must notify the U.S. EPA and Ohio EPA for the purposes of conducting a final inspection.

The final inspection must consist of a walk-through inspection of the Facility affected by the clean-up by U.S. EPA, Ohio EPA, and the Respondents.

5.4.1. Utilize the pre-final inspection report must be used as a checklist with the final inspection focusing on the outstanding construction items identified in the pre-final inspection.

5.4.2. Confirmation must be made that outstanding items have been resolved.

5.4.3. Reports

These reports must document all significant developments during the preceding period, to include:

5.4.3.1. Monthly Progress Reports.

5.4.3.2. The work performed and any problems encountered;

5.4.3.3. Waste volumes transported off-site broken down into the following categories: RCRA and solid waste;

5.4.3.4. Analytical data received during the reporting period;

5.4.3.5. Developments anticipated during the next reporting period including a schedule of work to be performed;

5.4.3.6. Anticipated problems, planned resolutions of past or anticipated problems;

5.4.3.7. Identify any changes in key personnel.

5.4.3.8. Projected work for the next reporting period;

5.4.3.9. Copies of reports, including but not limited to daily reports, field logs, inspection reports, and laboratory/monitoring data.

5.5. Completion of Removal Action Report

Within 30 days of a successful final inspection, Respondents must submit a Completion of Removal Action Report. In the report, a registered professional engineer and the Settling Defendants' Project Coordinator must state the Removal Action has been completed in full satisfaction of the requirements of this SOW. The written report must include as-built drawings signed and stamped by a professional engineer. The report must contain the following statement, signed by a responsible corporate official of the Respondents or the Respondents' Project Coordinator:

> *"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

Task 6: Operation and Maintenance

The Respondents must prepare an Operation and Maintenance (O&M) Plan to cover both implementation and long term maintenance of the Removal Actions. An initial Draft O&M Plan must be submitted as a final Design Document submission. The final O&M Plan must be submitted to U.S. EPA prior to the pre-final construction inspection, in accordance with the approved construction schedule. The plan must be composed of the following elements:

6.1. Description of normal operation and maintenance ;

6.1.1. Description of tasks for operation;
6.1.2. Description of tasks for maintenance;
6.1.3. Description of prescribed treatment or operation conditions;
6.1.4. Schedule showing frequency of each O&M task.

6.2. Description of potential operating problems;

6.2.1. Description and analysis of potential operation problems;
6.2.2. Sources of information regarding problems;
6.2.3. Common and/or anticipated remedies.

6.3. Description of routine monitoring and laboratory testing;

6.3.1. Description of monitoring tasks;
6.3.2. Description of required data collection, laboratory tests and their interpretation;
6.3.3. Required quality assurance, and quality control ;
6.3.4. Schedule of monitoring frequency and procedures for a petition to U.S. EPA to reduce the frequency of or discontinue monitoring;

6.3.5. Description of verification sampling procedures if Cleanup or Performance Standards are exceeded in routine monitoring.

6.4. Description of alternate O&M;

6.4.1. Should systems fail, alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and the environment or exceed performance standards;
6.4.2.. Analysis of vulnerability and additional resource requirement should a failure occur.

6.5. Corrective Action;

6.5.1. Description of corrective action to be implemented in the event that cleanup or performance standards are exceeded;
6.5.2. Schedule for implementing these corrective actions.

6.6. Safety plan;

6.6.1. Description of precautions, of necessary equipment, etc., for Site personnel;
6.6.2. Safety tasks required in event of systems failure.

6.7. Description of equipment; and

6.7.1. Equipment identification;
6.7.2. Installation of monitoring components;
6.7.3. Maintenance of Site equipment;
6.7.4. Replacement schedule for equipment and installed components.

6.8. Records and reporting mechanisms required.

6.8.1. Daily operating logs;
6.8.2. Laboratory records;
6.8.3. Records for operating costs;
6.8.4. Mechanism for reporting emergencies;
6.8.5. Personnel and maintenance records;
6.8.6. Monthly/annual reports to US EPA and Ohio EPA.

Task 7: Performance Monitoring

Performance monitoring must be conducted to ensure that all Performance Standards are met.

7.1. Performance Standard Verification Plan

The purpose of the Performance Standard Verification Plan is to provide a mechanism to ensure that both short-term and long-term Performance Standards for the Removal Action are met. The Draft Performance Standards Verification Plan must be submitted with the Intermediate Design. Once approved, the Performance Standards Verification Plan must be implemented on the approved schedule. The Performance Standards Verification Plan must include:

7.2. Quality Assurance Project Plan
7.3. Health and Safety Plan
7.4. Field Sampling Plan

IV. SUMMARY OF MAJOR DELIVERABLES/SCHEDULES

A summary of the project schedule and reporting requirements contained in this SOW is presented below:

	Submission	Due Date
1	Removal Design/Removal Action Work Plan	60 days after effective date of order
2.	Removal Design/Removal Action Work Plan Addendum	45 days after completion of pre-removal field sampling

3.	Award Clean-up Actions Contract(s)	Thirty (30) days after receipt of USEPA's approval of Work Plan Addendum
4.	Pre-Construction Inspection and Meeting	(15) days after Award of RA Contract(s)
5.	Initiate Construction of RA	15 days after Pre-Construction Inspection and meeting
6.	Pre-final Inspection	No later than 15 days after completion of construction
7.	Pre-final Inspection Report	15 days after completion of prefinal inspection
8.	Final Inspection	15 days after completion of work identified in prefinal inspection report
9.	Final O&M Plan	No later than Prefinal Inspection
10.	Construction Completion Report	30 days after final inspection
11.	Completion of Clean-up Action Report	30 days after final inspection
12.	Completion of Work Report	See Section XVII in the AOC and Task 5.5 of this SOW

Attachment 1
Regulations and Guidance Documents

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the NTCRA process:

1. American National Standards Practices for Respiratory Protection. American National Standards Institute Z88.2-1980, March 11, 1981.
2. ARCS Construction Contract Modification Procedures September 89, OERR Directive 9355.5-01/FS.
3. CERCLA Compliance with Other Laws Manual, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (DRAFT), OSWER Directive No. 9234.1-01 and -02.

4. Community Relations in Superfund — A Handbook, U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.
5. A Compendium of Superfund Field Operations Methods, Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.
6. Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, U.S. EPA, Office of Solid Waste and Emergency Response, October 1986, OSWER Directive No. 9472.003.
7. Contractor Requirements for the Control and Security of RCRA Confidential Business Information, March 1984.
8. Data Quality Objectives for Remedial Response Activities, U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.
9. Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual, U.S. EPA Region IV, Environmental Services Division, April 1, 1986 (revised periodically).
10. EPA NEIC Policies and Procedures Manual, EPA-330/9-78-001-R, May 1978, revised November 1984.
11. Federal Acquisition Regulation, Washington, DC: U.S. Government Printing Office (revised periodically).
12. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive NO. 9355.3-01.
13. Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potential Responsible Parties, U.S. EPA Office of Emergency and Remedial Response, EPA/540/G-90/001, April 1990.
14. Guidance on Expediting Remedial Design and Remedial Actions, EPA/540/G-90/006, August 1990.
15. Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites, U.S. EPA Office of Emergency and Remedial Response (DRAFT), OSWER Directive No. 9283.1-2.
16. Guide for Conducting Treatability Studies Under CERCLA, U.S. EPA, Office of Emergency and Remedial Response, Prepublication version.
17. Guide to Management of Investigation-Derived Wastes, U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9345.3-03FS, January 1992.
18. Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.
19. Health and Safety Requirements of Employees Employed in Field Activities, U.S. EPA, Office of Emergency and Remedial Response, July 12, 1982, EPA Order No. 1440.2.
20. Interim Guidance on Compliance with Applicable of Relevant and Appropriate Requirements, U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.
21. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.
22. Methods for Evaluating the Attainment of Cleanup Standards: Vol. 1, Soils and Solid Media, February 1989, EPA 23/02-89-042; vol. 2, Ground water (Jul 1992).
23. National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, Federal Register 40 CFR Part 300, March 8, 1990.
24. NIOSH Manual of Analytical Methods, 2nd edition. Volumes I-VII for the 3rd edition, Volumes I and II, National Institute of Occupational Safety and Health.
25. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, National Institute of Occupational Safety and Health/Occupational Health and Safety Administration/United States Coast Guard/Environmental Protection Agency, October 1985.
26. Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, February 19, 1992, OSWER Directive 9355.7-03.
27. Procedure for Planning and Implementing Off-Site Response Actions, Federal Register, Volume 50, Number 214, November 1985, pages 45933-45937.
28. Procedures for Completion and Deletion of NPL Sites, U.S. EPA, Office of Emergency and Remedial Response, April 1989, OSWER Directive No. 9320.2-3A.

29. Quality in the Constructed Project: A Guideline for Owners, Designers and Constructors, Volume 1, Preliminary Edition for Trial Use and Comment, American Society of Civil Engineers, May 1988.
30. *Remedial Design/Remedial Action (RD/RA) Handbook*, U.S. EPA, Office of Solid Waste and Emergency Response (OSWER) 9355.0-04B, EPA 540/R-95/059, June 1995.
31. Revision of Policy Regarding Superfund Project Assignments, OSWER Directive No. 9242.3-08, December 10, 1991. [Guidance, p. 2-2]
32. Scoping the Remedial Design (Fact Sheet), February 1995, OSWER Publ. 9355-5-21 FS.
33. Standard Operating Safety Guides, U.S. EPA, Office of Emergency and Remedial Response, November 1984.
34. Standards for the Construction Industry, Code of Federal Regulations, Title 29, Part 1926, Occupational Health and Safety Administration.
35. Standards for General Industry, Code of Federal Regulations, Title 29, Part 1910, Occupational Health and Safety Administration.
36. Structure and Components of 5-Year Reviews, OSWER Directive No. 9355.7-02, May 23, 1991. [Guidance, p. 3-5]
37. Superfund Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, April 1990, EPA/540/G-90/001.
38. Superfund Remedial Design and Remedial Action Guidance, U.S. EPA, Office of Emergency and Remedial Response, June 1986, OSWER Directive No. 9355.0-4A.
39. Superfund Response Action Contracts (Fact Sheet), May 1993, OSWER Publ. 9242.2-08FS.
40. TLVs-Threshold Limit Values and Biological Exposure Indices for 1987-88, American Conference of Governmental Industrial Hygienists.
41. Treatability Studies Under CERCLA, Final. U.S. EPA, Office of Solid Waste and Emergency Response, EPA/540/R-92/071a, October 1992.
42. USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, U.S. EPA, Office of Emergency and Remedial Response, July 1988.
43. USEPA Contract Laboratory Program Statement of Work for Organic Analysis, U.S. EPA, Office of Emergency and Remedial Response, February 1988.
44. User's Guide to the EPA Contract Laboratory Program, U.S. EPA, Sample Management Office, August 1982.
45. Value Engineering (Fact Sheet), U.S. EPA, Office of Solid Waste and Emergency Response, Publication 9355.5-03FS, May 1990.
46. Guide to Documenting Cost and Performance for Remediation Projects, Publication EPA-542-B-95-002, March 1995.
47. Presumptive Remedies: Policy and Procedures, U.S. EPA, Office of Solid Waste and Emergency Response, Directive 9355.0-47FS, EPA 540-F-93-047, PB 93-963345, September, 1993.
48. Presumptive Remedies for Soils, Sediments, and Sludges at Wood Treater Sites, U.S. EPA, Office of Solid Waste and Emergency Response, Directive 9200.5-162, EPA/540/R-95/128, PB 95-963410, November, 1995.
49. Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Groundwater at CERCLA Sites, U.S. EPA, Office of Solid Waste and Emergency Response, Directive 9283.1-12, EPA 5401R/023, June, 1996.
50. “Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA, USEPA, Office of Emergency and Remedial Response 1993, EPA/540-R-93-057"